

**Patent Claims**

1. A scanning microscope with an excitation light beam to optically excite a first area of a specimen, with a stimulation light beam to trigger a stimulated emission or an additional excitation in another area of the specimen that at least partially overlaps with the first area of the specimen, comprising at least one objective to focus the excitation light beam and the stimulation light beam and an optical component to influence the shape of the focus of the excitation light beam and/or of the stimulation light beam, characterized in that at least one optical system for imaging the optical component into the pupil of the objective is provided, whereby the size of the image of the optical component can be adjusted.
2. The scanning microscope according to claim 1, characterized in that the optical system comprises movable focusing means.
3. The scanning microscope according to either claim 1 or 2, characterized in that the optical component is arranged so as to be movable.
4. The scanning microscope according to any of claims 1 to 3, characterized in that the optical system and/or the optical component can be moved by means of a motor.
5. The scanning microscope according to any of claims 1 to 3, characterized in that the optical system comprises a varifocal optical system that preferably can be adjusted using a motor.
6. The scanning microscope according to any of claims 1 to 5, characterized in that the optical system can be replaced.
7. The scanning microscope according to claim 6, characterized in that a supply means is provided that stores optical systems having different optical properties.

8. The scanning microscope according to claim 6, characterized in that the supply means comprises a turret or a sliding carriage.
9. The scanning microscope according to either claim 7 or 8, characterized in that the supply means is driven by a motor.
10. The scanning microscope according to any of claims 1 to 9, characterized in that the size of the image of the optical component is adjusted automatically.
11. The scanning microscope according to any of claims 1 to 10, characterized in that the size of the image of the optical component is adjusted as a function of the diameter of the pupil of the objective.
12. The scanning microscope according to any of claims 1 to 11, characterized in that the optical component comprises a phase-retarding plate.
13. The scanning microscope according to claim 12, characterized in that the phase-retarding plate is a  $\lambda/2$  plate.
14. The scanning microscope according to claim 12, characterized in that the phase-retarding plate locally brings about differing phase retardations in different areas.
15. The scanning microscope according to any of claims 1 to 14, characterized in that the optical component acts exclusively on the stimulation light beam.
16. The scanning microscope according to any of claims 1 to 15, characterized in that the scanning microscope is a confocal scanning microscope or a double confocal scanning microscope.